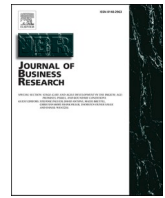




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Digital transformation during a pandemic: Stretching the organizational elasticity

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ABSTRACT

How can firms turn their COVID-19 pandemic-driven digitalization efforts into sustainable digital transformation? Firms accelerated their digitalization efforts during the global pandemic to an emergency speed. This speed of implementation of digital technologies left organizations with little time to adapt their structures, processes, and culture to the new environment. We argue that firms currently remain in a stretched operations mode that will either bounce back to normal after the pandemic or ultimately lead to organizational failure. Seven in-depth case studies based on 11 interviews of top management support our argument and show that, during this crisis, firms have been operating in a state of exception. We take an organizational elasticity perspective to investigate this status and develop an agenda for firms to facilitate sustainable digital transformation. Our study provides important insights into organizational elasticity as a framework to manage the long-term organizational impact of the current pandemic.

1. Introduction

The global COVID-19 pandemic and the resulting global countermeasures have required firms to speed up their digitalization efforts to ensure business continuity (Barnes, 2020; Kamal, 2020; Kodama, 2020; Papadopoulos, Baltas, & Balta, 2020; Sein, 2020; Verma & Gustafsson, 2020). Their ad-hoc implementation of new technologies, processes, and structures was critical to enable remote value co-creation, but it has come at a price: the emergency activities during the pandemic led to incomplete DT in the absence of adequate time to implement solid change activities and clear requirements of the post-pandemic economy and society. However, a successful and sustainable digital transformation (DT) builds on an integrated approach to changing firms' structures, processes, technologies, and culture (Vial, 2019). Therefore, most firms are exiting the global pandemic in an intermediary transformation stage that is stretching their existing structures and processes. This could lead to organizational inefficiency, ineffectiveness, or failure if these ad-hoc changes are not considered as part of DT.

Dialectical process theory stresses that organizational change is driven by two or more opposing influences that exert continuous push and pull forces on organizational, technological, and social elements and ultimately either create a new equilibrium or lead to organizational

failure (De Keyser, Guette, & Vandenbempt, 2019). For example, DT introduces technologies that push against existing technologies with inferior performance and exert a pulling force on the processes, structures, and social behavior that can benefit from the technology's value proposition. Following the logic of dialectical process theory, the ad-hoc introduction of new technologies to an organization creates an exogenous shock, with the technology acting as a powerful opposing force against the status quo (Putnam, Fairhurst, & Banghart, 2016). The co-existence of these opposing forces causes friction and tension until a dominant influence emerges that allows the organization to find a new balance (Farjoun, 2019).

We argue that most firms are currently operating in a state of imbalance because their introduction of emergency measures to support business continuity triggered a dialectical process (Sein, 2020). As the pandemic evolves, firms need to find a new organizational balance and secure the long-term value of the ad-hoc decisions and investments that they made for business continuity. Toward that end, we build on an analysis of the growing body of literature on DT (Hanelt, Bohnsack, Marz, & Antunes Marante, 2021; Vial, 2019) and the impact of COVID-19 (Kamal, 2020) to elucidate the success factors for converting emergency activities into sustainable DT. Relevant theory indicates that sustainable DT requires the alignment of strategy, business model,

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project portfolio, and corporate culture. However, our results, based on 7 case firms including small, medium, and large companies from different industries (pharmaceutical, engineering, industrial manufacturing, and IT services), suggest that DT activities were undertaken at an accelerated speed without this required alignment. Our analysis assumes that the emergency changes that firms have implemented oppose their established structures and processes, leaving organizations suspended in a transitional stage of change.

We introduce the concept of organizational elasticity to investigate the capability of firms to stretch existing processes and structures in times of high uncertainty and volatile environmental development for the purpose of deliberately setting an organization into a transitional state. Strong organizational elasticity enables firms to take decisive actions with workforce commitment and leaves them with the option to return to old routines or quickly settle into new routines after a crisis. Although we argue that organizational elasticity has positive short-term effects, it also brings an increasing risk of wearing out organizational structures and fatiguing the workforce over time, which can ultimately lead to organizational failure.

2. Theoretical background and transformation patterns

2.1. Digital transformation as a dialectical process

DT requires firms to reconsider their value creation logic and proposition as the boundaries between the digital and physical world begin to disappear (Rindfleisch, O'Hern, & Sachdev, 2017). The ability to transform their business models is especially critical for incumbent firms that are increasingly competing with disruptive digital start-ups (Snow, Fjeldstad, & Langer, 2017). DT is a multilevel construct that affects not only firms but also society and the economy at large (Hanelt et al., 2021; Legner et al., 2017; Vial, 2019). Moreover, it is mainly driven by external factors, such as new technologies, new competitors, and changing customer preferences (Verhoef et al., 2021). A digital strategy “[...] that serves as a central concept to integrate the entire coordination, prioritization, and implementation of digital transformations within a firm” (Matt, Hess, & Benlian, 2015:339) is a critical success factor. Creating return on investment from a DT requires changes in the organizational structure, culture, and employees' roles and skills, as well as in the leadership style (Warner & Wäger, 2019).

However, incumbent firms often struggle with DT due to complex information technology setups and organizational inertia as well as active and passive resistance to change (Vial, 2019; Wimmelius, Mathiassen, Holmström, & Keil, 2021). Hence, we frame DT as a dialectical process to explain its underlying dynamics. The central assumption of dialectical theory is that contradictions between at least two opposing concepts—thesis and antithesis—are the foundation of all change within an organization (Farjoun, 2019). Putnam et al. (2016) described dialectics as a rubber band in which opposing forces constantly push and pull. In turn, this interaction between two opposing forces challenges the status quo and leads to either a creative synthesis or failure (van de Ven & Poole, 1995). The introduction of digital technologies creates an antithesis in established organizations and initiates such a dialectical process. Thus, incumbent firms with low digital maturity will experience digital technology as a particularly strong antithesis to their current state (Vial, 2019).

Building on the rubber band metaphor by Putnam et al. (2016), the continual push–pull between thesis and antithesis provides a strong narrative to understand digital transformations as moving back and forth between traditional value creation logics (thesis) and novel, digitalized approaches (antithesis). The final design of the synthesis becomes the result of a complex socio-technical process with an evolutionary character.

In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic (Cucinotta & Vanelli, 2020). Drastic measures, such as curfews, lockdowns, and social distancing have been

taken by governments to contain the pandemic. As such, COVID-19 has had an unparalleled influence on society, organizations, and workplace practices, leaving almost no aspect unaffected (Ebersberger & Kuckertz, 2021; Kirk & Rifkin, 2020). A growing body of literature on COVID-19 has investigated the current situation from a crisis management perspective (e.g., Breier et al., 2021; Kuckertz et al., 2020), from an organizational resilience standpoint (e.g., Giones et al., 2020; Salvato, Sargiacomo, Amore, & Minichilli, 2020;), and from a social impact view (e.g., Barnes, 2020; Díaz Andrade & Techatassanasoontorn, 2021). Building on the business management-related COVID-19 literature and the vast literature on change, crisis, and digital transformation management, we derived three patterns that we tested against the empirical data gathered from our cases (Sinkovics, 2018).

2.2. COVID-19 and business models

The unexpected, volatile, and potentially disruptive nature of the COVID-19 pandemic triggered organizational crises (Bundy, Pfarrer, Short, & Coombs, 2016). In the process, the unprecedented power and reach of the pandemic created an accelerated dialectical process that afforded firms little time to find an adequate response (Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017) while, at the same time, exerted pressure to act immediately (De Keyser et al., 2019). In particular, firms with low levels of digital maturity struggled with the emergency adoption of digitalization measures (Amankwah-Amoah, Khan, Wood, & Knight, 2021). According to Carracedo, Puertas, and Marti (2021), firms had the option to wait for the situation to revert to pre-pandemic conditions or to adapt to current conditions. Both options challenged firms to ensure the effectiveness and continuity of their business models (Seetharaman, 2020).

Business models are blueprints that describe how firms propose, create, and capture value (Teece, 2018). As recent research and opinion papers agree that the pandemic accelerated DT (Soto-Acosta, 2020; Wade & Shan, 2020), we assume that the pandemic also accelerated the digitalization of business models. Research on incumbents' digital business model innovation (BMI) outlines that BMI does not follow a pre-defined path and is difficult to forecast because every firm sets its own priorities for digitalizing value proposition, value creation, and value capture (Klos, Spieth, Claus, & Klusmann, 2021). However, even incremental BMI by incumbents (Li, 2020; Sund, Bogers, & Sahramaa, 2021) requires consideration of the full business model during change because incremental changes in one business model dimension are likely to affect others as well (Klos et al., 2021).

The pandemic has had the potential to impact business models in all areas, especially when these models required physical interaction and co-presence with or between clients, e.g., in the retail, tourism, and leisure industry. Early evidence has shown that affected firms temporarily adapted their business models or experimented with new offerings outside their market domain (Breier et al., 2021; Kraus et al., 2020). At the same time, incumbents' traditional business models can also fail as global supply chains are interrupted or customer demand decreases (Guan et al., 2020).

Likewise, the inability to be physically present in the office impacts virtual value co-creation. In particular, firms that ignored the digitalization pressure of the past decade have been forced to kick-start digitalization initiatives to ensure the effectiveness of their value proposition, creation, and capture mechanisms. On the other hand, as Fletcher and Griffiths (2020) assumed, firms with a high level of digital maturity mastered the pandemic much better than those with low digital maturity. For some firms, the pandemic has also offered a starting point to seize “transformative opportunities” (Kamal, 2020:314).

Dialectical process theory explains the consequences of rapid engagement in digitalization efforts. Incorporating information technology not only transforms isolated mechanisms but also initiates a transformation process that can impact work styles, corporate culture, and, ultimately, the business model (Kodama, 2020). Thus, we argue

that firms validated and updated their business models during the global pandemic to integrate their digitalization efforts into a lasting and sustainable digitalization:

Pattern 1: Firms enabled a sustainable digital transformation by adapting their business models to the changing requirements of the post-pandemic environment.

2.3. Influences on digital strategy

The pandemic challenged firms to secure their operations with containment measures. Therefore, we adopted the assumption that firms revisited their business models to identify shortcomings or opportunities and develop new digitalization strategies to mitigate or realize them with technology. Digitalization strategy requires the definition of appropriate actions, a check for dependencies, and effective execution (Seetharaman, 2020). Key initiatives relate to securing the supply chain, sales channels, and effective collaboration within the organization. For example, in 2020, we witnessed the swift and large-scale introduction of collaboration software, such as Microsoft Teams, Zoom, and others (Kodama, 2020; Sein, 2020) as a response to the need for remote workplaces (Kamal, 2020). Such action was taken because the global pandemic left organizations with little or no time to prepare for the consequences (Carroll & Conboy, 2020) and with no other choice than to engage in DT to “avoid short-term economic collapse” (Soto-Acosta, 2020:265).

Moreover, firms needed to critically review their overall technology setup, the effectiveness of their cyber security organizations, required adaptations to existing work regulations, and even incentive and career mechanisms (Kniffin et al., 2021). Research strongly points to a lasting impact from the current pandemic (Doyle & Conboy, 2020) as firms have equipped their workplaces with hardware and software to work remotely and employees, partners, and clients are growing increasingly familiar with this practice (Nagel, 2020). In this way, digitalization strategy is critical to ensuring long-term return on investment from short-term actions taken to mitigate a crisis. Hence, a DT strategy is needed to specify the required business model changes.

Klos et al. (2021) identified a strategic planning phase as crucial for successful business model transformation in incumbent firms, regardless of its introduction of digital technology or disruption of its entire value creation logic (Matt et al., 2015). Without the implementation of an effective strategy, the accelerated DT will remain a “[...] reactive short-term solution with little or no reflection and considered approaches for long-term sustained use of practices” (Carroll & Conboy, 2020:1). Therefore, we concluded in pattern 2 that firms adapted their digitalization strategies to ensure business continuity during the pandemic and to prepare for the post-pandemic environment:

Pattern 2: Firms enabled a sustainable digital transformation by updating their digitalization strategy to the changing requirements of the post-pandemic environment.

2.4. Impact on the workforce

Reluctance to change, inertia, organizational culture, and organizational structure are the traditional barriers to successful DT (Vial, 2019). Travel bans, lockdowns, curfews, and, above all, health concerns have forced organizations to rapidly adapt digital technologies to uphold business operations (Barnes, 2020; Sein, 2020) and practically erased resistance to change (Papagiannidis, Harris, & Morton, 2020). Díaz Andrade and Techatassanasoontorn (2021) described the digitalization efforts during the pandemic as “digital enforcement.” Especially considering the combination of remote work, ad-hoc activities, and the speed of change, the digital divide in our society might continue to grow as certain employees lack the skills, infrastructure, technologies, or work routines that enable top performance in a digital work context.

The current uncertainty regarding the future development of the pandemic worsens the situation for employees who experience public,

social, and economic uncertainty (Sharma, Leung, Kingshott, Davcik, & Cardinali, 2020). It is unclear what restrictions will be imposed in the short run and remain in the long-term. It is further uncertain how our social life will be affected or how and when the economy will recover.

In this vein, Barnes (2020) defined eight essential areas for research on the post-pandemic world, including well-being, equality, employment, and work. The author showed that, as firms consider their future setup, they need to take a full human-centric perspective. Short-term measures for business continuity, such as the ad-hoc introduction of digital tools and new processes, need to be stabilized for long-term effectiveness with training, change management, and organizational enablement (Carroll & Conboy, 2020). Toward this end, Biron et al. (2020) suggested reviewing and considering new ways of working and organizing work to improve collaboration in times of crisis, and Kodama (2020) suggested focusing not only on digital technologies but also on the capabilities required to use new technologies effectively. Verma and Gustafsson (2020) concluded that firms need to define new strategies for their business, effective operating models for the post-pandemic “normal,” and new labor policies that consider health protection. Thus, enabling sustainable DT goes beyond incorporating digital equipment. Most importantly, it requires managerial action (Li, Su, Zhang, & Mao, 2018).

From a leadership perspective, managerial action is needed to establish a “[...] people centric approach that is founded on trust [...]” (Amis & Janz, 2020:277). Prior research on change initiatives has pointed out that employee support is a crucial component in successfully and sustainably implementing change (e.g., Bayraktar, 2018; Heyden, Fourné, Koene, Werkman, & Ansari, 2017). In particular, keeping employees informed reinforces understanding of the change measures and thereby creates a positive attitude toward changing conditions (van den Heuvel, Schalk, & van Assen, 2015). Similarly, workforce training is equally important to ensuring a lasting transformation. Ribeiro-Navarrete, Botella-Carrubi, Palacios-Marqués, and Orero-Blat (2021) identified a positive relationship between business performance and training the workforce in the use of digital technologies in the service sector. Employees who are prepared to use digital technologies are more likely to create a digital mindset, which is another important driver of sustainable DT (Solberg, Traavik, & Wong, 2020).

Therefore, we concluded that the COVID-19 pandemic created a unique condition wherein transformation resistance ceased as it became inevitable for survival. Firms must not exploit this situation. Instead, they must develop a new consciousness for their social responsibility with a human-centered focus to build an effective and healthy workforce for a sustainable digital future. Thus, we derived pattern 3:

Pattern 3: Firms enabled a sustainable digital transformation by creating awareness and commitment and training the workforce.

3. Methods and data

3.1. Flexible pattern approach

To answer the “how” and “why” questions related to these contemporary phenomena, we used a multiple case study approach (Yin, 2009). We opted for the pattern matching technique, which is a combined deductive and inductive process for case study analysis guided by our initial theoretical framework (Skjott Linneberg & Korsgaard, 2019). The overall goal of the pattern matching technique is the externalization of tacit knowledge, assumptions, schemes, and beliefs as much as possible to make the research more comprehensible (Sinkovics, 2018). Predicted patterns derived from theory are matched against their empirical counterpart, namely, the case study data, which makes it possible to uncover emergent patterns in case there are mismatches between theoretical prediction and empirical observation (Sinkovics, 2018). In contemporary research, the method has developed into an established approach to analyze qualitative data (Bouncken & Tiberius, 2021;

Bouncken, Qiu, & García, 2021).

We applied the flexible pattern matching technique to meet the needs of the exploratory design of our case study research (Sinkovics, 2018). First, we built on our theoretical framework and literature review to code the case data. The initial coding iteration was guided by the aggregated dimensions from our theoretical patterns (King, Brooks, & Tabari, 2018). The template that we used for scrutinizing our cases is presented in Table 1, which depicts theoretically derived patterns along with a brief description of what we expected to happen in the cases. Next, we identified cases in which predicted patterns did not match the empirical patterns. Finally, we applied inductive coding to explain the mismatch. We visualized emergent patterns using the Gioia methodology (Gioia, Corley, & Hamilton, 2013). The structured approach to uncover novel theoretical implications makes this method a fruitful approach for theory building (Bouncken & Barwinski, 2021).

3.2. Case selection and data collection

Our study comprised seven cases that we labeled Alpha, Beta, Gamma, Delta, Epsilon, Zeta, and Eta. We followed a purposeful sampling approach to collect information-rich cases to examine our phenomenon of interest (Patton, 2015). In total, 11 interviews were conducted over the course of three months from December 2020 to February 2021. Guided by our initial research interest in DT during a pandemic, we started in-depth interviews in the first case firm—Alpha—to refine our interview guidelines based on actual insights. We interviewed the chief information officer (CIO), the head of a specialized IT function with specific digitalization experience, and a project manager with experience in transformation projects to derive a holistic overview of the current situation. We were able to identify pressing management issues with an iterative adaptation of the interview guideline during the interviews with Alpha. After the first interview round, we identified the subsequent case firms where we focused on interviewing CEOs, CIOs, and information security practitioners as experts on DT with top-level management insights. We carefully selected the case firms to gain insights across different industries, firm sizes, ownership status, and business models to maximize case variance and obtain optimally generalizable results (Patton, 2015).

The following interviews were governed by a semi-structured interview guideline. Thereby, we were able to ensure in-depth insights into our case firms while covering all important aspects of digitalization. We

started our questionnaire with a general inquiry about the interviewees’ professional backgrounds and their relationship to digitalization. We then proceeded with in-depth questions about their firms’ business models, digitalization strategies, organizational initiatives to tackle digitalization, and the impact of the current COVID-19 crisis on their operations. Each interview was conducted by two interviewers. Data from the interviews were supplemented with secondary data derived mainly from the case firms’ websites and annual reports.

3.3. Data analysis

Interviews were transcribed verbatim and coded using MAXQDA2020. All interviews were conducted and recorded using video conferencing tools. Table 2 gives a brief description of each case firm. Interview duration ranged from 34 min to 1 h, with an average duration of 50 min. The initial coding framework was developed from our theoretical framework. While analyzing the cases, it was possible to identify matches and mismatches between our theoretical predictions and empirical observations. The flexible pattern matching technique allowed us to identify novel, emerging patterns in our data. They are presented in the results section.

We coded the transcribed interviews in two iterations. In the first iteration, we coded the transcripts deductively according to our predefined patterns. In the second iteration, we analyzed the data for mismatches between predictions and observations. The mismatches between prediction and empirical data allowed us to uncover a novel pattern to explain the discrepancy between theory and empirical data.

4. Results

4.1. Pattern matching

We derived three patterns from the recent research on DT, digitalization, business continuity, and the global pandemic. Based on top-level management interviews, we developed seven cases to check the validity of our patterns. Table 3 shows the initial results with a summary for each case as well as an indication of which pattern was confirmed (indicated with an X) or rejected (blank space). Contrary to our expectations, case firms had neither updated their business models (pattern 1) nor refined their digitalization strategies (pattern 2). Nonetheless, our case firms had made investments to prioritize digitalization initiatives. Therefore,

Table 1
Initial Coding Template.

Pattern	Dimension affected	Underlying theoretical consideration	Operationalization of the dimension	Expected expression ¹	Expected implication for case firms
P1: Firms enable a sustainable digital transformation by adapting their business models to the changing requirements of the post-pandemic environment.	Business Model	Business Model Innovation (BMI) ²	Value proposition	Weak to Strong	Firms revise their business model and establish customer centric digital services, digital communication tools and use digital channels to retail products and services.
			Value creation	Weak to Strong	Digital technology is integrated in existing structures; new work practices.
			Value capture	Weak to Strong	Revenue model gets expanded to capture value from digital services.
P2: Firms enable a sustainable digital transformation by updating their digitalization strategy to the changing requirements of the post-pandemic environment.	Strategy	Digital Transformation Strategy (DTS)	Prioritization of digital initiatives	Strong	Firms invest in and prioritize digital initiatives to buffer short term negative effects.
			Integration and coordination of transformative activities into the organizational structure	Strong	Firms carve out a strategic framework to establish long-term structures that enable digital transformation.
P3: Firms enable a sustainable digital transformation by creating awareness, commitment and training the workforce.	Leadership and People	Change Management	Supportive behavior by figureheads and workforce commitment	Strong	Figureheads create awareness for the exceptional situation and employees show commitment for quick adaptation.

¹ Expected expression indicates whether we expect the dimension to be weakly or strongly pronounced in the case studies

² Business model transformation framework is based on Klos et al. (2021) study on digital business model innovation in incumbent firms. Expected expression ranges from weak to strong as it is unclear which aspect of the BM will get changed

Table 2
Case Descriptions.

	Alpha	Beta	Gamma	Delta	Epsilon	Zeta	Eta
Industry	Manufacturing	Pharmaceuticals	Pharmaceuticals	Public Services	Manufacturing	Manufacturing	Consulting
Legal Structure	Family led corporation	Listed Corporation	Corporation	Corporation	Family led corporation	Listed Corporation	Corporation
Operation	Worldwide	Worldwide	Worldwide	Nationwide	Worldwide	Worldwide	Worldwide
Revenue	1–5 bn €	10–20 bn €	1–5 bn €	0–1 bn €	1–5 bn €	1–5 bn €	1–5 bn €
Employees	1,000 – 5,000	10,000 – 20,000	1,000 – 5,000	1 – 1,000	5,000 – 10,000	10,000 – 20,000	10,000 – 20,000
Business Model	Production and development of technical equipment in the building engineering sector	Production and development of pharmaceuticals for therapeutic purposes	Production and development of pharmaceuticals for therapeutic and aesthetic purposes	IT customer support and application development for a local energy provider	B2B sales of professional tools for industrial customers	Production and development of special machinery for industrial production processes	Providing customers with consulting services

we must reject pattern 1, and we only have partial confirmation for the second pattern. The third pattern, regarding a strengthened focus on the workforce, was fully supported.

The first pattern assumed that firms would adapt their business models to the requirements of a changing environment during a crisis. One would expect that, more than a year into a global pandemic, management would have addressed alignment of value propositions, customer interaction, access to and management of resources, key activities, and the firm’s revenue model. However, our observations revealed no substantial changes to the current business models of our case firms. The only considerable changes occurred to the business models of Beta and Eta, which focused on customer relationship management.

“We set up projects with customers we didn’t know before. We really did everything virtually, from the proposal to the customer presentation and start of the project. I’ve never met the people physically. And some of the feedback is really, really good.” (Executive, Eta)

As knowledge-based service providers, consulting firms in particular traditionally strongly rely on direct interaction with clients, co-located co-creation, and strong social relationships. However, travel activities and on-site interaction were significantly reduced by the pandemic, forcing consulting into online collaboration. In contrast to producing firms, this had an impact on the key mechanisms of value creation and value delivery in consulting. However, as most business model elements have remained unchanged, we did not evaluate this insight as confirmation for pattern 1.

Our case firms continued business at acceptable levels or benefited from previous digital collaboration experience. Ultimately, the pandemic turned out to be a trigger for realizing digitalization initiatives that were already overdue. No interviewees expressed pressing challenges or deep concerns regarding their business models:

“We continued with the current organizational mode. The only thing we had done is that [...] we kind of increased the service desk availability. [...]. At the end of May, we went back to the normal mode.” (Executive, Delta)

While we needed to reject pattern 1, we found partial support for the second pattern regarding the prioritization of digitalization initiatives. All case firms had a special focus on enabling remote working to ensure business continuity. However, while no case firm updated its strategy for a post-pandemic environment, DT accelerated in all case firms. Case firm Alpha emphasized the impact on the speed of digitalization efforts during the crisis, while case firm Delta stressed the importance of strategic foresight and top-management commitment:

“So, at the moment when the crisis started and people could no longer go to work every day, we were able to implement these things at lightning speed.” (CIO, Alpha)

“[...] The [Note: Parent Company] Group is a company that has taken the whole issue of home office, support for the fight against the pandemic very seriously since the beginning and is very, very far-sighted in its approach.” (Executive, Delta)

The initial digital maturity of firms played a critical role in business continuity during the pandemic. As such, the availability of adequate hardware for online collaboration was a basic but critical prerequisite. While the case firm Gamma highlighted the technological readiness for remote collaboration, case firm Delta emphasized their strategy update that led to stocking up on hardware in an early phase of the crisis:

“I think we are very well positioned in terms of remote workplace. That means using the technologies that no matter where you are you can find the tools that you need. We are certainly very well positioned there.” (CIO, Gamma)

Table 3
Pattern Matching.

Case	Case Summary	Pattern 1			Pattern 2		Pattern 3
		Value proposition	Value creation	Value capture	Prioritization of digitalization	Integration and coordination into the business structure	Leadership support and workforce commitment
Alpha	No adaption of the business model as the building and engineering sector remains stable. Digitalization activities are prioritized and accelerated, such as the rollout of hard- and software. The exceptional situation is accepted on the basis that management is supportive and provides training in coping with the new situation. The unexpected exogenous shock has triggered a leap in digitalization efforts because resistance to (digital-) change initiatives was not present.				X		X
Beta	Business model innovation was not on the agenda, because pharmaceutical products are highly demanded during the COVID-19 pandemic. Minor changes were made in customer acquisition through digital channels. The accelerated roll-out of digital tools for collaboration ensured business continuity. Management shows supportive behavior towards its workforce to get employees' commitment. In addition, meaningfulness in the work was seen because some drugs produced by Beta are used against COVID-19.	(X) ¹			X		X
Gamma	No adaption of the business model was necessary as pharmaceuticals are highly demanded. Digital initiatives are prioritized, especially through the introduction of novel communication tools and additional hard- and software. Acceptance among employees is achieved through specialized training courses aiming at reinforcing digital skills and understanding of the measures taken. Figureheads advocate the usage of digital tools and thereby contribute to the normalization of the measures.				X		X
Delta	No business model adaptation was triggered because of the high demand for IT services. Early in the pandemic, hardware and software licenses were stocked up in strategic foresight. Top-Management creates awareness for the exceptional situation to create workforce commitment. Employees of Delta took responsibilities beyond their contractual assigned tasks (i.e., providing workers in the home office with help in the set-up of a private printer or WiFi connection) to ensure business continuity.				X		X
Epsilon	Adaptation of the business model is not on the agenda of Epsilon. The ad-hoc emergency measures and accelerated roll-out of digital tools ensured business continuity. Top-Management creates commitment with supportive behavior, such as the possibility to come to the office in case facilities at home do not allow for adequate working conditions and encouraging those who can to stay at home.				X		X
Zeta	No adaptation of the business model, as the engineering and construction sector remains stable. Digitalization initiatives get prioritized. The exceptional situation led to a high acceptance on the side of the workforce with practically no arguments about the initiatives.				X		X
Eta	Minor adjustments to the business model are made regarding the exploration of new customer channels and interactions. The digital strategy did not need further prioritization as digitalization was already on a sufficient level. Especially hard- and software is tailored to work from everywhere. All hierarchical levels show strong involvement and create a shared firmwide commitment in mastering the challenges of the pandemic.	(X) ¹					X

¹ Brackets indicate minor adjustments to this dimension, which are not considered proof for the pattern.

“Somehow, we had a feeling that something was coming up, so we checked if we were missing equipment or licenses for remote working like webcams, notebooks or [hardware] token.” (Executive Delta)

Setting up the collaboration for remote interaction and thereby creating the baseline for DT was fully prioritized in all case firms. Case firms Zeta and Eta outlined the digital enforcement character (Díaz Andrade & Techatassanasoontorn, 2021) of the achievements as well as the capability to handle the pressure:

“There was an acceleration effect that had to happen, but it turned out really well. [...]Of course, that’s also survival instinct. They have to work and then it works. That’s how it was with us, too. Very snappy. But very professionally operated.” (Legal Counsel, Zeta)

Finally, we found strong support for pattern 3. All interviewees shared the understanding that the pandemic required firms to put a special focus on their employees. There was a great awareness that the accelerated roll-out and adoption of collaboration technologies required follow-up activities to evaluate the impact and training needs in the workforce. Case firm Alpha discussed the impact of online collaboration on the speed of interaction and predicted extensive time requirements to accustom the workforce to the new ways of working. A critical success factor for achieving the change was thorough training for the full workforce, including top management:

“We have trained the people up to the top management with regard to [Microsoft] Teams, explained how they can deal with it [...], we approached it, I think, very, very positively, made good decisions, also made them quickly. I think that was an important thing in the crisis.” (Manager, Alpha)

Case firm Eta stressed the disruptive character of the fast-paced changes. All levels of organizations, including top management, began to communicate, collaborate, and co-create digitally. Over the first year of the pandemic, digitalization accelerated to a speed and reached a level of penetration that would have been impossible in a normal situation:

“But, in the end, it worked! And more or less everyone got involved. That is the first realization. And for me, the most important realization is that everything went further, as far as possible.” (Manager, Eta)

Case firm Delta outlined the extent of the required changes that allowed firms to fully collaborate online. Again, we saw strong support for pattern 3 as firms achieved impressive changes in a very limited time, especially considering the preparation for legal requirements:

“[We] were able to make a conservative German medium-sized company home office capable, or remote capable, within two or three weeks in a way that affected about 2,500 employees. [...] That is, we were able to sign a company agreement together with the works council in March, which [...] exactly, the whole topic of home office. The bottom line is that it says, as soon as possible we guarantee home office.” (Executive, Delta)

4.2. Theory development

Our research aimed to identify the success factors for turning the activities, measures, and investments of firms during the pandemic crisis into sustainable and value-creating DT. While we observed the reprioritization of digitalization efforts for new ways of working (Nagel, 2020) and firms dealing with the resulting consequences for the workforce, we could not find significant evidence for the adaptation of business models. Likewise, firms had not updated their digitalization strategies. Our most important observation was related to the strong uncertainty regarding the further course of the pandemic and the upcoming changes after the crisis. After almost a full year of business during a pandemic, firms were still working in a mode of exception and

were reluctant to make long-term decisions:

“(…) I’m waiting for things to change again. So—I don’t know—we now also have, (...) very strictly limited budget processes, because we are now acting very, very carefully here. I don’t think you can continue like this in the long run.” (Manager, Alpha)

“I worked from my kitchen counter for a very long time. So, really five months. And I thought, yeah this will pass, (...) and I thought, ‘Nah, so now you’re not going to put a desk or anything in here. It’s not that permanent.’ And then at some point it just is. Yeah, we don’t travel anymore. And then you just start to set up for it somehow. And then it becomes normal, bit by bit.” (Manager, Eta)

Our interview partners shared the point of view that the environment and ways of working have changed and that the changes will not be reversed to pre-pandemic conditions. What we observed was a fatalistic wait-and-see attitude, since the pandemic is perceived as a significant exogenous event with unclear outcomes that cannot be “managed”:

“There is no back-to-normal, there is a new normal! And we don’t know yet what that will look like. However, that’s a fact now, we have to be fatalistic and adjust to the situation and make the best out of it. And I believe that industry did a pretty good job with that.” (Legal Counsel, Zeta)

“I personally believe that we will not go back to where we were before. So, I am firmly convinced. Because most companies have also recognized the benefits of how we work now. [...] I think that’s going to stay [...]” (Executive, Eta)

“I can’t answer that question directly at the moment. I can only tell you what difficulties we are having now. [...] And that’s a topic that will accompany us very, very strongly in the next few months or in the next year.” (CIO, Alpha)

The observation ties into the results from our pattern matching approach. While our case firms are taking actions that could contribute to sustainable DT, e.g., introducing online collaboration technologies, automating processes, and creating new customer channels, their primary intentions are to bridge the pandemic period until the highly dynamic environment stabilizes and allows for long-term planning. Since our case study sample covers diverse industries and firm sizes, we assumed this insight reflects the condition of most firms, leaving us with two important insights.

First, as the current implementation of technologies focuses on emergency requirements, firms jeopardize the long-term value creation of their investments. In tandem with this reality is that further investments are held back to avoid illiquidity, given the uncertainty of the situation (Qin, Huang, Shen, & Fu, 2020). However, after the successful introduction of new technologies to enable remote working, organizations need to develop a clear model for future collaboration and value creation mechanics. Firms and employees gained a lot of experience in new ways of working and, even if a return to the pre-pandemic situation would be technically possible, it is unlikely that employees will accept it (Carroll & Conboy, 2020; Díaz Andrade & Techatassanasoontorn, 2021; Seetharaman, 2020).

Second, firms are risking the effectiveness of their workforce. With the isolated introduction of change, firms created unbalanced organizations. For example, many organizations succeeded in the introduction of collaboration technologies, but they did so without offering concepts to replace the surrounding mechanisms and offerings of the traditional workplace. The potentially negative impact for employees who are suddenly forced into remote work covers technical (access to high-speed internet, ergonomic office facilities, hardware, workspace), social (personal exchange, maintaining social ties), health-related (diet, sports, psychological health) and financial dimensions (working hours, variable pay, incentives). Considering the prevailing uncertainty about the further course of the pandemic and the upcoming changes in the economy and society (Brammer, Branicki, & Linnenluecke, 2020), we must

assume that employees are currently working in a strained and stressful situation. Sustainable DT will require firms to assess the new capabilities built on these investments and to tie them into their overall digitalization agenda.

Based on our observations, we argue that firms have a specific capability that allows them to stretch the structural, technological, and social dimensions of their organizations to react to endogenous or exogenous shocks and remain effective until the effect of a shock lessens and standard routines can become effective again. This capability allows firms to introduce short-term structural and/or technical changes without losing the commitment of the workforce for a certain period. We refer to this capability as “organizational elasticity” as a synthesis of social, technical, and structural elasticity. Fig. 1 outlines the empirical grounding of organizational elasticity with additional evidence for each case firm documented in the Appendix.

The rubber band analogy for the dialectic process theory by Putnam et al. (2016) suggests that an organization is subject to a constant push and pull from opposing forces. Organizational elasticity determines how far and how long the rubber band can be stretched before it snaps back into its old shape or tears apart. Organizational elasticity is an additive function of the mutually dependent structural, technical, and social elasticity. Thereby, each elasticity has a stretch limit that is influenced by the other elasticities, and organizational elasticity is deemed to fail when one sub-elasticity fails. For example, if the structural dimension is stretched to its theoretical limit, any additional social or technical strain might lead to organizational failure, while a reduced technical or social strain can compensate for increased structural elasticity. Substantial improvements of one elasticity will raise the overall organizational elasticity. Change activities will consume organizational elasticity and risk that organizations snap back to their usual routines until a theoretical threshold is exceeded and change creates a novel organizational balance. Therefore, we assume that organizational elasticity has a moderating effect, reducing the negative impact of endogenous or exogenous shocks on organizations. In this vein, the efforts of DT need to be considered as shocks as well. While the buffering effect of organizational elasticity is helpful in a crisis, it also presents a hindering factor during DT. The basic logic of organizational elasticity is summarized in

Fig. 2.

The concept of organizational elasticity as a capability provides explanatory value for firms that are currently reacting to the COVID-19 pandemic with short-term ad-hoc actions or investments. Firms exploit their organizational elasticity when they focus on quick fixes, such as cost cutting or tackling new markets or products, rather than thoroughly designing new organizations or business models (Wenzel, Stanske, & Lieberman, 2020). As the full impact and duration of the pandemic are not yet predictable, organizational elasticity raises one critical question: how long can organizations operate in the current emergency mode before their structures, technologies, and employees fail or lapse back into old routines?

The stretch of the technological dimension of organizational elasticity during the pandemic is obvious. For example, firms were required to introduce remote working ad-hoc without training or change management. Effective remote work requires adequate internet connectivity, communication and collaboration tools, and access to firm-specific applications and tools. As a result, firms needed to ensure the availability and scalability of the right technologies and even consider bad internet connectivity.

“I call it the last mile. That’s basically what I’m experiencing here right now, namely that their private network connection is ultimately limiting [...] many colleagues are longing to return to the office, as well as because of the performance of the office.” (CIO, Gamma)

The structural dimension of organizational elasticity refers to the ability to stretch organizational elements, such as hierarchies, processes, reporting, and meeting routines, to meet the requirements of an event. Case firm Delta, for instance, stretched its structural elasticity by ad-hoc workforce shifts to support priority tasks.

“So, what we had to do in March, April, and certainly into May, especially at the help desk, that was already on the edge of the—yes—on the edge of what was feasible. We have also shifted people from other areas to support the helpdesk, especially with regard to the topic of networks.” (Executive, Delta)

As the pandemic triggered varying societal restrictions, the social

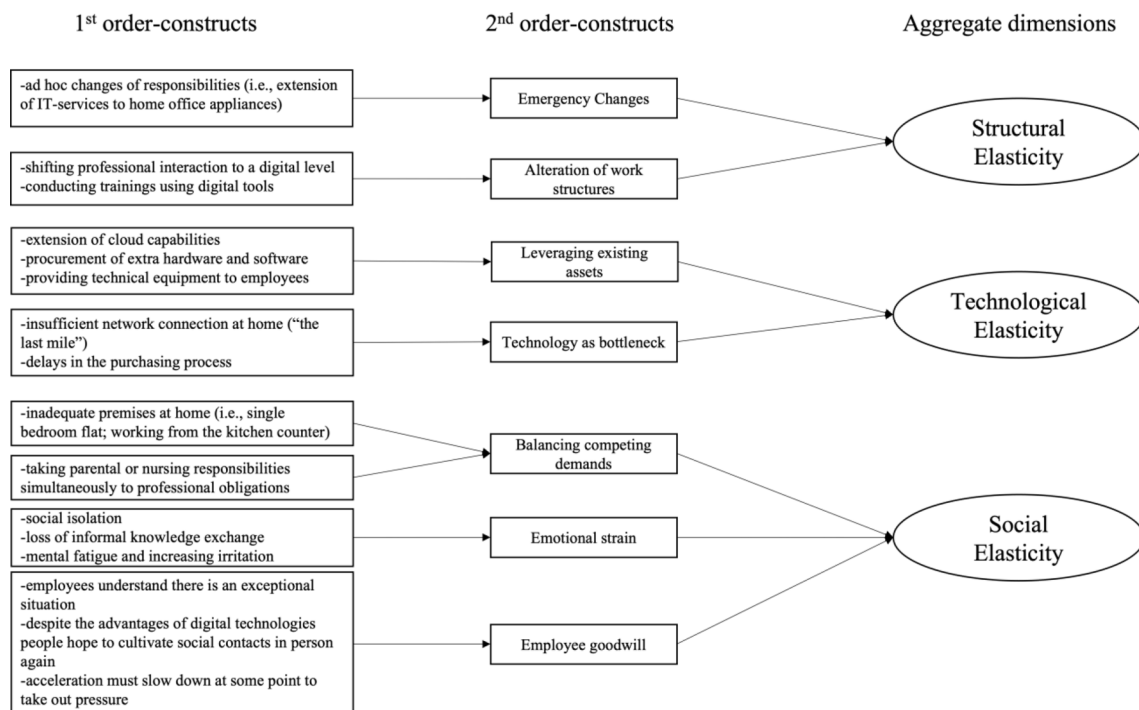


Fig. 1. Visualization of emergent structures.

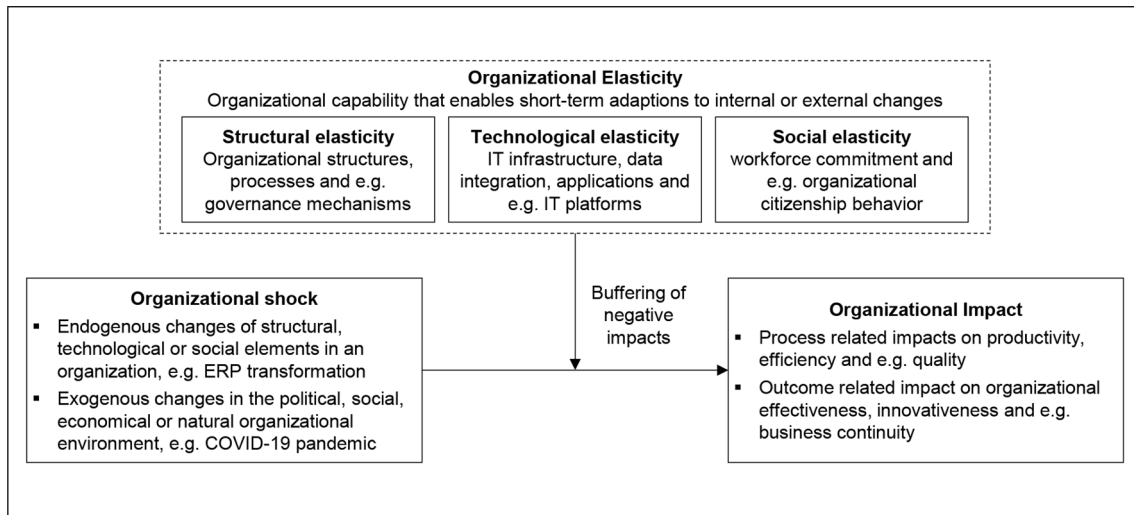


Fig. 2. Organizational Elasticity.

dimension of organizational elasticity could become the bottleneck for overall elasticity. Prolonged lockdowns, insecurity regarding the impact of the pandemic, and isolation while working from home with inadequate facilities, are heavily straining the workforce, especially as elaborated new ways of working are still missing.

“So, I work in my living-dining-kitchen, I have 20 square meters, approximately, and that’s just my workplace, alright? I don’t have a big screen yet. My husband also works from time to time in the home office. The two of us then sit in the 20 square meters.” (Manager, Eta)

The concept of organizational elasticity provides explanatory value beyond organizational crisis management for overall change management. We argue that organizational elasticity focuses on key success factors of DTs. A DT is usually initiated by the need to digitalize processes, update technologies, adapt organizational structures, and/or upskill the workforce (Vial, 2019). Regardless of the initial trigger, any DT will unleash a multi-faceted impact that spans all dimensions of organizational elasticity. A successful DT needs to consider mutual dependence among the structural, technical, and social dimensions and provide an approach to introduce change instead of stretching the elasticity.

5. Discussion

5.1. Organizational elasticity and COVID-19

We have demonstrated that firms can stretch existing boundaries to a certain extent to buffer negative impacts from exogenous or endogenous shocks. Organizational elasticity allows firms to prevent short-term organizational failure or to adapt quickly to changing environments. Elasticity has already proven to be a useful capability in identity and institutional research as it enables firms to stretch existing boundaries “without organizationally breaking apart” (Gümüşay, Smets, & Morris, 2019:124). Yet, stretching too far bears the burden of organizational failure if tensions cannot be resolved in the mid-term or long-term. However, the key areas of organizational elasticity are also key components of sustainable DT. Extant research points out the impact of DT on new technologies (technological elasticity) (Verhoef et al., 2021; Vial, 2019), new structures and routines (structural elasticity) (Tronvoll, Sklyar, Sörhammar, & Kowalkowski, 2020), and workforce transformation (social elasticity) (Eden, Jones, Casey, & Draheim, 2019).

Following Hanelt et al. (2021), a key to DT is to unlock the organization or to put it into a transitional stage that makes the transformation possible in the first place. The school of deliberate planning suggests that

organizational transformation goes through a) an initiation phase, b) a transitional phase, and c) a stabilization phase (Galli, 2018; Lewin, 1951) until a “sustainable metamorphosis” is reached (Nutt & Backoff, 1997:235). COVID-19 triggered a leap forward to the transitional stage as resistance to change practically did not exist and because time pressure made organizational failure imminent (Amankwah-Amoah et al., 2021). The introduction of DT initiatives accelerated, as predicted by scholars (Soto-Acosta, 2020), a phenomenon that was reflected in our data. However, the leap forward not only suspended the barriers to organizational transformation (i.e., rigid hierarchies, inertia, change resistance) but also suspended important prerequisites for a successful transformation. Firms are reluctant to take further action and remain in a stretched mode instead of formalizing kick-started, forced digitalization and effectively capitalizing on the efforts. The analogy of the rubber band suggests that firms need to take action before the band is stretched too far and breaks, snaps back, or wears out. As such, a breaking rubber band means organizational failure, a snapback would mean that the transformation efforts failed, and wearing the rubber band out would mean that business efficiency and effectiveness are at stake. Right now, we witness an incomplete DT as firms are trapped in a vacuum between the old and new normal. The acceleration of DT initiatives is not converted into sustainable structures or strategies and, to date, has had no significant impact on business models.

We saw a general tendency that the apprehension voiced by Carroll and Conboy (2020) of acceleration being only a reactionist, short-term measure is, at this stage, true for most cases. The manager of case firm Beta summed up what actions need to be taken subsequently as the constant acceleration leads to reaching the theoretical stretch limit of social elasticity:

“If we bring it back to digital, which is inherently transformative, you must have some face-to-face time for a change. [...] But nonetheless [...] we’ve proven we can adapt in many cases faster than we thought we could. So, long story short [...] there’s only a certain amount of speed you can keep without stressing your [organization]. So [another] thing that will need to change, which is a better understanding of the day-to-day health of your workforce.” (Manager, Beta)

It is critical to overcome the stretch and turn the short-term efforts into a sustainable transformation. At this point, it is appropriate to clarify key terms that revolve within the realm of DT. The terminology is often unclear or used synonymously with related terms, such as digitization or digitalization (Legner et al., 2017), or confused with IT-enabled organizational transformation (Wessel, Baiyere, Ologeanu-

Taddei, Cha, & Blegind-Jensen, 2021). Digitization in its most basic form refers to the conversion from analog to digital (Verhoef et al., 2021), while digitalization addresses the socio-technical changes associated with digitization (Legner et al., 2017). DT emphasizes the widespread changes that are induced by digital technologies and have a profound impact on organizational design, value creation, and hence the business model of a firm (Hanelt et al., 2021; Warner & Wäger, 2019). IT-enabled organizational transformation refers to the digitalization of business processes to facilitate value creation without focusing on the overall value creation logic (Wessel et al., 2021). The incumbent firms in our sample almost exclusively focused on facilitating value creation without redefining it. Therefore, we suggest that the pandemic is currently accelerating digitalization without creating sustainable DT.

5.2. From stretch to change

We have seen that organizational elasticity can be leveraged in situations in which volatility and uncertainty are high, such as in a global pandemic. Organizational elasticity complements risk management activities that alleviate negative financial impacts (Packard & Clark, 2020) or resilience strategies for extraordinary situations (Sabatino, 2016).

We argue that organizational elasticity provides value beyond crisis management or situations with a severely adverse impact. Each dimension of the organizational elasticity capability provides explanatory value throughout distinct phases of digitalization and change. As outlined previously, there are varying concepts and understandings of DT and the corresponding business model transformation, and firms have differing DT goals. Soluk and Kammerlander (2021) described DT as a journey from process digitalization to business model transformation. Similar approaches are described, for example, by Verhoef et al. (2021). Table 4 outlines that different transformation activities must cope with distinct types of elasticity.

We argue that social elasticity is essentially activated in all forms of transformations, starting with the fundamental process of digitalization as employees are required to change and leave their routines. Social elasticity, in conjunction with technological elasticity, is activated in cases in which changes are more impactful, such as in product or service digitalization (Soluk & Kammerlander, 2021). At this stage, structural elasticity is not the main concern because the underlying operating logic is not fundamentally altered.

In fundamental business transformations, such as IT-enabled organizational transformation or DT, firms must address the three layers outlined in Table 4 simultaneously during the transitional phase of the transformation. In digital initiatives, firms usually tend to over-emphasize the role of digital technology while forgetting the human aspect (Schwarz Müller, Brosi, Duman, & Welpe, 2018). Hence, a possible reason for failure might be a distorted focus toward the technology itself, while the workforce remains in a stretched mode and eventually breaks or wears out. We thus argue that it is critical in every transformative undertaking to reduce strain from temporary stretches on the workforce as soon as possible and implement stable processes. Soluk and Kammerlander (2021) outlined that, even if external triggers activate a transitional phase, internal triggers are of equal importance. In this way, the triggers for change in process or product digitalization efforts are more salient as the change to the organization can be directly observed (Soluk & Kammerlander, 2021). Thus, handling organizational

elasticity becomes a critical management task that enables successful and sustainable DT.

5.3. Limitations and further research

Our study is not free from limitations. First, as we carried out a qualitative research study, the concept of organizational elasticity requires further research, scale development for quantitative analyses, and extended theoretical underpinnings. Second, our insights are based on seven case studies—restricted to German incumbent firms—that do not provide a fully representative overview. However, we are convinced that our results provide important insights into how firms have handled the global pandemic.

Third, we framed the current situation as a dialectic process between current ways of working that exert pulling forces and the introduction of digital technologies that exert pushing forces. The process was accelerated by the pandemic and will potentially result in a novel equilibrium (Putnam et al., 2016). It is possible that the tensions are (temporarily) resolved by activating the capability of organizational elasticity. However, further scrutinization of DT as a dialectical process would require longitudinal data to examine how the process unfolds over time (Farjoun, 2019). To the best of our knowledge, no prior study has framed DT as a dialectical process.

6. Conclusion

The objective of this study was to explore the impact of the global COVID-19 pandemic on the sustainable success of digital transformation endeavors. Theory suggests that firms respond to crises with updated business models, adjusted digitalization strategies, and a strong focus on workforce related measures. While our sample of seven interview-based case studies confirmed the assumed efforts of firms to reduce negative impacts on the workforce, no major changes to existing business models or digitalization strategies were reported. Our observations indicate that firms are currently in a standby position, waiting for the dynamic environment to stabilize.

The global pandemic exposes firms' ability to adjust flexibly and temporarily to changes in their environment as a critical capability for corporate success and survival. We introduced the term organizational elasticity to describe the ability of organizations to operate with technological, structural, and social ad-hoc changes without formal interventions. In times of crisis, organizational elasticity enables short-term adjustments—an organizational stretch—to meet dynamic requirements from the environment before returning to normal operations. Firm-specific organizational elasticity determines the possible extent and duration of an organizational stretch.

Beyond the business continuity management perspective (Seetharaman, 2020), organizational elasticity provides important insights into the multi-layered nature of digital transformations as integrated technological, structural, and social transformations (Vial, 2019). Firms need to address the three layers of transformation simultaneously to prevent organizational stretch and overcome the pull-back forces of organizational elasticity. As the global COVID-19 pandemic is likely to turn into a long-term companion with no predictable social or economic restrictions, firms need to reduce their organizational stretch, integrate their short-term business continuity actions into a sustainable transformation, and prepare for a volatile post-pandemic “new normal.” Thereby, organizational elasticity provides an important framework for research and practice to design and realize sustainable transformation approaches.

CRediT authorship contribution statement

Andreas Reuschl: Conceptualization, Data curation, Formal analysis. Maximilian Deist: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Data curation,

Table 4
Types of elasticity activated in distinct change phases.

	Process digitalization	Product/Service digitalization and general change	Business Transformation/DT
Social	X	X	X
Technological	–	X	X
Structural	–	–	X

Conceptualization. **Adnane Maalaoui:** Writing – review & editing, Writing – original draft.

interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Competing Interest

The authors declare that they have no known competing financial

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None.

Appendix. Quote table organizational elasticity

Case	Type of Elasticity	Exemplary Quote
Alpha	Structural	Like almost everybody, I think, fiercely. Because in a relatively short time, so to speak; We had a landscape before where we had Skype, then GoTo Meeting, so there were different tools that were used. It was also a very, I'll say, meeting driven organization, so in person, right? That means you met, you worked on something together, then you went back to your workplace and worked alone. So that was very, very strictly separated. (Manager)
	Technological	So, for example, not everyone in the company had laptops. No, well, that was for people who needed it, who perhaps had to travel, had a laptop, but there were many, now let's put it bluntly, if I now have a personnel manager who has, so to speak, a relatively regular job, or someone in the financial area releases invoices, he had his desktop workstation and he worked with it and it all worked great. But he couldn't dismantle his desk at the beginning of March and set it up at home. And these were just issues. (Manager)
	Social	Many colleagues have children or families, and perhaps they don't have the space at home, so they had to settle in first. So, I think that was already a mega upheaval. (Manager) I hope that things will be different. That we can go back to the office normally, maintain social contacts. That's something we need, of course. I hope that things will be different again. (Manager) But I don't know now whether that will continue. We will probably come to a point where the acceleration is so great that you say, "Okay, stop, we have to discuss this again in more detail." And then that change doesn't happen as quickly. (CIO)
Beta	Structural	I mean loss of contact with other people, you know, but a gain in connectivity, because suddenly we are all online all the time and connected through different channels. (Manager)
	Technological	–
	Social	So, if I look at our people, the people in our company, they had the main impact. And I think obviously you've heard this, you know, the main impact was the loss, loss of connectivity on one side. And by that, I mean loss of contact with other people [...] (Manager) And here then you start to see and perceive the real value that we bring to the world now. And I think that an understanding of how our products are directly helping people who are suffering from respiratory and or cardiovascular symptoms suddenly gives the whole organization a lot of purpose. Not that we didn't have it before. It was just so much more visible. (Manager) The health of the workforce perception, right, with no data, perception would be folks are tired, folks are tired. We are running the business at the same or accelerated pace. There's no slowdown. There's zero slowdown. It's either the same or not. And that plus the change in interaction causes, I think, inherently more stress on the mind, on emotions, et cetera. (Manager)
Gamma	Structural	–
	Technological	The second problem is that we sometimes had to deal with solutions that were not fully developed. We had to run updates, we had to introduce new releases, in order to ultimately improve significantly in the video conferencing segment, for example. And we've been able to do that for about 4–5 months now without any problems. And within this framework, the cooperation works very well, both internally and externally, in my opinion. (CIO) As a company, we were of course prepared to provide access via VPN, as virtual network access, virtual private network access. We didn't expect to access 3,000 employees via VPN, for example. And we had only purchased 1,000 VPN licenses, for example. As a result, in the first few weeks, a large number of employees were unable to access the system via VPN because they simply did not receive a license. It was not assigned to them. That was a learning effect (CIO)
	Social	So, the employees who wanted to go back to the office are the ones where one partner worked at the kitchen table and the other in the bedroom. And you basically listened to each other. Or you couldn't get out of each other's way either. And if you then have school children in the household, it gets damn difficult, unless you're dealing with a 200 square meter house. (CIO)
Delta	Structural	Well, the ticket numbers certainly exploded at the beginning. So, what we had to do in March, April, and certainly into May, especially at the help desk, that was already on the edge of the; Yes. On the edge of what was feasible. We have also shifted people from other areas to the helpdesk for support, especially with regard to the topic of networks. And of course, there have been issues like yes I can't get; I can't log on to the VPN to I can't get my private, personal printer addressed. Yes, or my network has only 8 Mbit instead of 50 Mbit, but I have a 1 Gigabit line. (CEO)
	Technological	We also had infrastructural difficulties. So, of course, our colleagues, especially on the network side, really worked day and night on the whole issue of VPN access. (CEO)
	Social	The other area where we are currently reaching our limits is with new hires, i.e., when we bring new colleagues on board, it is very, very difficult for us to convey a sense of identification with the company, a sense of "we" and a sense of belonging. These are the limits that we are currently reaching. (CEO)
Epsilon	Structural	We were open anyway, but in the future, there will certainly be more home offices than there were before. And for many companies, this was a no-go before, and now they're also completely surprised to find out: "Oh, it works. Sometimes it's not so great when you have a meeting with 12 people and they're all online, but it works." (CIO)
	Technological	–
	Social	There are also some who don't have the opportunity to work properly at home. And I do believe that it makes sense. I'm also happy when I see some people again after, I don't know, 4 or 5 weeks. No, because I don't see them so regularly now either. That is then already beautiful. So, I think only at home is also not good. But a good middle course with a certain flexibility. We've had that for a while, and it doesn't bother anyone. (CIO)
Zeta	Structural	–
	Technological	Of course, the technical solutions had to be found. I don't think there's anything more corrosive when it doesn't work at all for the time being. Data is no longer available. Okay, these basic requirements are already there, that's good. (...) But then these forms of work are found (Legal Counsel)
	Social	You have your location there, you have the coffee kitchen. Such topics, where one then also; These are habitual factors and feel-good factors, too, which also have their justification and are important. So. This is also shifting into the digital realm. (Legal Counsel)
Eta	Structural	–
	Technological	–
	Social	But of course, that also has, I'll say, dramatic consequences actually, too, right? [Name of coworker] knows how much I complain about my home office. Digitalization is all well and good, I have my laptop, which works very well. But I think there's a lot missing in terms of what makes digitalization and people ready to embrace it. (Manager)

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